REMARKS

I. Status of the Claims

Claims 23-42 are pending in the application and stand rejected, variously, under 35 U.S.C. §112, first and second paragraphs. The specific grounds or rejection, and applicants' response thereto, are set out in detail below.

II. Drawings

Substitute informal drawings are provided in response to the Office Action (attached).

III. Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 23 and 25-42 are rejected under the second paragraph of §112 as allegedly indefinite for the recitation of "derivative." This term is considered by the examiner to encompass nucleic acids that do not include sequences derived from SEQ ID NO:1. While applicants traverse the rejection, as well as the flawed interpretation upon which it is based, applicants have offered an amended claim 23 that further defines derivatives as those that hybridize under stringent conditions to SEQ ID NO:1, clearly implicating the structure of that sequence. Reconsideration and withdrawal of the rejection is, therefore, respectfully requested.

Claims 23-42 are rejected under the second paragraph of §112 as allegedly indefinite over a variety of recitations, each addressed below:

Claim 23. Claim 23 is rejected as not over the phrase "biological activity of side-shoot formation, petal formation and abscission zone formation." Applicants traverse the rejection. The specification clearly describes the ability of polypeptides encoded by SEQ ID NO:1 to promote side-shoot formation, petal formation and abscission zone formation.

See pages 10-11 of the specification. However, depending on how the nucleic acids are ***used***, for example, as antisense constructs, the opposition effect may be achieved. Thus, applicants have amended the claims to indicate "control" of the stated biological functions. In light of the specification, this language is sufficiently clear and definite to apprise the skilled artisan of the metes and bounds of the invention.

Claim 24. Claim 24 is rejected for the term "stringent hybridization."[1] Applicants traverse. The term stringent hybridization is well known to those of skill in the art and, as of 1997, hardly needed any particular explanation to those working in this field. However, applicants direct the examiner to page 23 of the specification that reduced stringency is less that 50°C. Thus, high stringency would be higher than this figure.

Claim 32. Claim 32 is rejected for the use of the term "modified." Applicants traverse the rejection but, in the interest of advancing the prosecution, have amended the claim.

Claims 35-37. Claims 35-37 are rejected for the recitation of "further comprises integrating." A clarifying amendment is provided.

Reconsideration and withdrawal of each of the preceding rejections is respectfully requested.

IV. Rejections Under 35 U.S.C. §112, First Paragraph

A. Written Description

Claims 23-42 stand rejected under the first paragraph of §112 as allegedly encompassing subject matter not within the possession of applicants at the time of filing. Applicants traverse.

The examiner main point appears to be that the claims encompass nucleic acids "that are not structurally related to SEQ ID NO:1." While that statement is traversed with respect to the

claims previously submitted, applicants submit that it is moot in light of the amendments offered here, namely that the claimed derivatives hybridize to SEQ ID NO:1 under highly stringent conditions. Thus, it is not the case that "any deletion, substitution or addition" is encompassed. The rejection also is based, at least in part, on the alleged failure of applicants to define the hybridization conditions. As discussed above, claim 23 now recites "highly stringent" conditions, and this term ***is***, in fact, defined by the specification as higher than 50°C.

Finally, the examiner argues that no "deletions, insertions, or point mutations [are] described in the specification ... encoded a protein that retained the activity of SEQ ID NO:2." This fact, even if assumed true, does not mean that applicants did not possess the subject matter of the rejected claims. It simply means that a working example was not provided; however, it is black letter law that examples are, in fact, ***not*** required. *In re Borkowski*, 164 USPQ 642 (CCPA 1970). One of skill in the art would not doubt, given the present disclosure, that derivatives satisfying the limitations of the claims, could be created.

Having addressed each of the examiner's stated concerns, applicants respectfully request reconsideration and withdrawal of the rejection.

B. Enablement

Claims 23-42 are rejected under the first paragraph of §112 as allegedly lacking enablement. The examiner argues that since (a) the phenotype of Ls-transgenic plants is unknown, and that (b) only loss of function derivatives have been created, it would take undue experimentation to use the claimed invention. Applicants traverse.

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[1] Claim 24 has been canceled. However, as the term is now part of claim 23, the rejection is addressed to the extent that it would apply to amended claim 23.

Regarding the examiner first point, applicants submit that the present application clearly demonstrates that inhibiting expression of the Ls gene product reduces shoot formation, petal formation, and abscission zone formation. Thus, the inventors have made a significant contribution regarding the identification of the Ls gene's role in these activities. One of ordinary skill in the art would accept, on it's face, that this gene clearly plays an important role in shoot formation, petal formation, and abscission zone formation. As such, it would be acknowledged that increasing expression of the Ls gene would lead to increased shoot formation, petal formation, and abscission zone formation. Hence, though not proven, the phenotype of the plant can in fact be predicted to at least some degree.[2] In sum, the examiner has not offered any evidence to support the conclusion that one of skill in the art could not predict the phenotype of transgenic plants expressing Ls genes or antisense constructs, and thus, the invocation of *Genentech v. Novo Nordisk* is improper.

The other issue raised by the examiner – lack of derivatives that retain function – presents a similar situation with regard to enablement. Applicants acknowledge that the specification does not demonstrate derivatives that retain function. However, this is a far cry from establishing non-enablement. One of skill in the art is more than capable of making small deletions, insertions, truncations, fusions, *etc.*, each of which retain the ability to promote shoot formation, petal formation, and abscission zone formation. Again, the examiner has not offered any ***evidence*** as to why one of skill in the art would ***not*** be able to achieve make derivatives as claimed. As such, the examiner has not met the PTO's burden, required before the applicant is tasked with producing additional evidence in support of enablement. *In re Marzocchi*, 169 USPQ 370 (CCPA 1971).

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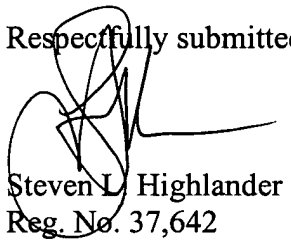
[2] Applicants contest the examiner's assertion that applicants have admitted that the phenotype of these transgenic

Having addressed each of the examiner's stated concerns, applicants respectfully request reconsideration and withdrawal of the rejection.

V. Conclusion

In light of the foregoing, applicants respectfully submit that all claims are in condition for allowance, and an early indication to that effect is earnestly solicited. Should Examiner Theres have any questions regarding this response, a telephone call the undersigned is invited.

Respectfully submitted,



December 18, 2002
Date

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plants is unpredictable.

Appendix A: Marked Up Copy of Claims

23. (Amended) An isolated nucleic acid molecule comprising:

(a) a nucleic acid having the nucleotide sequence of SEQ ID NO:1 or a nucleic acid complementary to said nucleotide sequence, wherein the nucleotide sequence encodes a polypeptide having the biological activity of controlling side-shoot formation, petal formation, and abscission zone formation;

(b) a fragment or derivative of said nucleic acid or said complementary nucleic acid, wherein the fragment or derivative encodes a polypeptide having the biological activity of controlling side shoot formation, petal formation, and abscission zone formation[; or

(c) a nucleic acid that hybridizes], said fragment or derivative hybridizing with said nucleic acid or said complementary nucleic acid[, wherein said hybridizing nucleic acid, or nucleic acid complementary to said hybridizing nucleic acid, encodes a polypeptide having the biological activity of side-shoot formation, petal formation and abscission zone formation] under highly stringent conditions.

24. (Canceled) The nucleic acid molecule of claim 23, wherein said hybridizing nucleic acid hybridizes with the nucleotide sequence of SEQ ID NO:1 under high stringency conditions.

32. (Amended) A method for generating a plant having [modified] increased or suppressed side-shoot formation, petal formation and abscission zone formation, the method comprising:

integrating a nucleic acid molecule of claim 23 into the genome of a plant cell or a plant tissue for [modifying] increasing or suppressing side-shoot formation, petal formation and abscission zone formation; and

regenerating the resulting plant cell or plant tissue into a regenerated plant, wherein the regenerated plant expresses [modified] increased or suppressed side-shoot formation, petal formation and abscission zone formation.

35. (Amended) The method of claim 32, wherein the integrating step [further] comprises integrating the nucleic acid molecule in an antisense orientation relative to an endogenous sequence[that modifies side-shoot formation, petal formation, and abscission zone formation].

36. (Amended) The method of claim 32, wherein the integrating step [further] comprises integrating the nucleic acid molecule in a sense orientation relative to an endogenous sequence[that modifies side-shoot formation, petal formation, and abscission zone formation].

37. (Amended) The method of claim 32, wherein the integrating step [further] comprises integrating the nucleic acid molecule into a genomic region of a homologous endogenous gene by homologous recombination.

Appendix B: Clean Copy of Pending Claims

23. An isolated nucleic acid molecule comprising:

(a) a nucleic acid having the nucleotide sequence of SEQ ID NO:1 or a nucleic acid complementary to said nucleotide sequence, wherein the nucleotide sequence encodes a polypeptide having the biological activity of side-shoot formation, petal formation, and abscission zone formation;

(b) a fragment or derivative of said nucleic acid or said complementary nucleic acid, wherein the fragment or derivative encodes a polypeptide having the biological activity of side shoot formation, petal formation, and abscission zone formation, said fragment or derivative hybridizing with said nucleic acid or said complementary nucleic acid under highly stringent conditions.

25. The nucleic acid molecule of claim 23, wherein said polypeptide has the amino acid sequence of SEQ ID NO:2.

26. The nucleic acid molecule of claim 23, wherein the nucleic acid has the nucleotide sequence of SEQ ID NO:1.

27. A vector comprising a nucleic acid molecule of claim 23.

28. A transformed plant cell comprising a nucleic acid molecule of claim 23, wherein the nucleic acid molecule is integrated in the genome of the plant cell.

29. A transformed plant cell according to claim 28, which can be regenerated into a seed producing plant.

30. A transformed plant tissue comprising the transformed plant cell according to claim 28.

31. A transformed plant tissue according to claim 30, which can be regenerated it to a seed producing plant.

32. A method for generating a plant having increased or suppressed side-shoot formation, petal formation and abscission zone formation, the method comprising:

integrating a nucleic acid molecule of claim 23 into the genome of a plant cell or a plant tissue for increasing or suppressing side-shoot formation, petal formation and abscission zone formation; and

regenerating the resulting plant cell or plant tissue into a regenerated plant, wherein the regenerated plant expresses increased or suppressed side-shoot formation, petal formation and abscission zone formation.

33. The method of claim 32, wherein the regenerated plant expresses suppressed side-shoot formation, petal formation, and abscission zone formation.

34. The method of claim 32, wherein the regenerated plant expresses increased side-shoot formation, petal formation, and abscission zone formation.

35. The method of claim 32, wherein the integrating step comprises integrating the nucleic acid molecule in an antisense orientation relative to an endogenous sequence.

36. The method of claim 32, wherein the integrating step comprises integrating the nucleic acid molecule in a sense orientation relative to an endogenous sequence.

37. The method of claim 32, wherein the integrating step comprises integrating the nucleic acid molecule into a genomic region of a homologous endogenous gene by homologous recombination.

38. The method of claim 32, wherein the regenerated plant is a tomato plant, a rape plant, a potato plant, or a snapdragon plant.

39. A plant obtained by the method according to claim 32.

40. A seed obtained from a plant according to claim 39.

41. A plant comprising a transformed plant cell according to claim 28.

42. A seed obtained from the plant according to claim 41.